

without outside help, and in addition thereto to broad-cast seeds over a larger area. The results are satisfactory. The Goema Reserved Forest now exhibits a very interesting spectacle to a forester: its site was barren waste land in the knowledge of the writer of this report 23 years ago, and it was then sown up chiefly with bábul; and seedlings of teak, of terminalia, anogeissus, dalbergia, &c., raised in nurseries, were planted out, subsequently among the bábul; the latter grew up to marketable size, and has been cut out at different times after it had been overtopped by the teak and junglewood saplings, which are now entirely suppressing the few remaining bábul trees in the struggle for the survival of the fittest, while the receipts already obtained by the sale of the exploited bábul wood has more than paid the expenses of creating a very rich little forest estate.

182. One hundred and fifty-eight maunds and 13 seers of seeds of teak and other trees were dibbled by forest guards during the rains of 1891 over 373 acres of blanks within the Reserved Forests of the Panch Maháls division. 89 acres were added to the Vejulpur plantation where 26 maunds and 6 seers of seeds were sown, and blanks inside the reserves in all the ranges were sown and planted up by hired labour. The seeds germinated very well and in the early part of the cold weather the seedlings, especially the bábul in the Eastern Kálol block raised from seeds imported from Sind, were looking healthy, but failure of the late rains tried the growing plants. The Conservator found the forests generally well filled with young growth, except in the very exposed portions, where cattle puddle the ground in the rains, and its surface hardens under the subsequent action of the sun into the similitude of sun-dried bricks.

183. This statement shows the total expenditure incurred on plantations in the several divisions of the Northern Circle with the areas treated during the year under different methods:—

No.	Division.	REGULAR PLANTATIONS.				CULTURAL OPERATIONS.				Total Cost.	REMARKS.
		Area in Acres.				Area in Acres.					
		On 1st April 1891.	Added.	Exclud- ed.	On 31st March 1892.	On 1st April 1891.	Added.	Exclud- ed.	On 31st March 1892.		
		Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Rs.		
1	North Thána ...	2,215	10	...	2,225	15,860	7,204	...	23,064	792	
2	South Thána ...	390	225	171	444	4,284	122	...	4,406	789	
3	East Khândesh ...	...	...	...	...	15,849	3,020	...	18,869	75	
4	West Khândesh ...	42	...	25	17	20,930	265	...	21,195	605	
5	Násik .. ...	...	...	...	...	8,188	865	394	8,659	1,236	
6	Ahmednagar...	142	...	...	142	11,098	8,756	...	19,854	2,024	
7	Poona... ..	...	408	...	408	39,937	1,187	...	41,124	1,644	
8	Sátára ...	3,194	17	...	3,211	114,786	1,364	...	116,150	666	
9	Sholápur ...	...	...	...	...	59,430	3,789	...	63,219	436	
10	Surat .. ...	...	...	...	...	1,006	265	...	1,271	853	
11	Panch Maháls ...	113	123	...	236	449	160	...	609	259	
	Total ...	6,096	783	196	6,683	291,817	26,997	394	318,420	9,379	

#### 9.—EXPERIMENTS WITH EXOTIC TREES.

184. Nothing new has been attempted in this direction during the year. The casuarina can scarcely be termed an exotic in the present day, as it is well established and has naturalised in the flora of Western India. The casuarina plantations along the sea shore in the Dáhanu and Umbargaon ranges of the North Thána division are doing fairly well. A quantity of seeds obtained from Kárwár in the Kánara district were sown in a nursery at Tithal near Bulsár, in view of making plantations upon the available waste lands on the sea shore in the neighbourhood. The nursery was well screened against the south-westerly winds, which blow with violence during the monsoon, and the seeds germinated very profusely; when they were a month old they were transferred to pots made by tying together face to face two ordinary roof tiles; and at the end of the year 1,255 plants, about one foot high, were in the nursery. If the plantation at Tithal is a success, as there is every reason to believe it will be,

many miles of the sea-board in the Surat district, at present unutilised drifting sandy wastes, can be converted into profitable casuarina plantations.

185. The Egyptian date palms are not doing well anywhere, and the Australian eucalypti do not find the Bombay Presidency so favourable to their growth as the Nilgherries apparently are. It is not desirable for the Forest Department to waste money upon the experimental cultivation of exotics when the local flora contains such very numerous kinds of beneficent, beautiful and valuable trees.

#### 10.—EARLY THINNINGS, REMOVAL OF INFERIOR SPECIES, CUTTING OF CREEPERS, &c.

186. The forest guards in most divisions are provided with a Maráthi koita, a kind of sickle or curved knife, wherewith to cut creepers; and this they are required to undertake in the forests of their beats without any paid assistance.

187. A species of loranthus, a parasitic shrub, is found growing on the branches of many trees of various kinds in the Thána forests: it affects chiefly teak trees, and attaches itself to the leading shoot as well as to side branches, and its roots penetrate the bark to the cambium layer with which they contract an organic adhesion so as to derive nourishment from the sap of the tree. The loranthus impoverishes and eventually kills the limb upon which it has established itself; it flowers the greater part of the year, and its berry is round about the size of a pea: birds and the natural dropping of the seeds cause its spread. The Collector of Thána drew the attention of the Conservator to the prevalence of loranthus in the Thána forests, and measures are being undertaken to exterminate this pest by cutting out all trees, which have been attacked by it in the coupes of the season, and by searching all closed forests (exploited coupes) annually with a view to lop off the limb of any tree which may have provided a home for the loranthus.

188. The eradication of prickly-pear, *Opuntia dillenü*, natural order Cactææ, from Reserved Forests in several divisions, has been carried on with vigour. This pestiferous plant, which is a native of Brazil, and now so common about most of the Deccan villages where it provides a safer refuge for wild pig, snakes and vermin of sorts in its dense impenetrable tangled masses, which form an unbroken cover over acres of ground, was introduced into Western India, so native tradition explains, by a Maráthá Sirdár Dábhádé by name, who brought a few seeds of it in his palanquin from Delhi, and his gift has been as noxious to the Deccan as was the shirt to Hercules. It is a very valuable plant for the reboisement of the barren and denuded uplands of the Deccan, for it establishes itself upon the most stoney soilless places, and it refuses to be turned out when it has once taken root, save at great cost and labour; filth and debris are arrested by it and accumulate round it, and its own roots open out the pores of the earth and form soil. The natives call it the nágphana nivadung; armed plants such as the *euphorbia nerrifolia*, *nivulia*, &c., are likewise generally termed "nivadung" in the vernacular, with Sabri and Thor added to denote their species: but the prickly-pear is called the nágphana nivadung because its obvate, flat, fleshy joints resemble the expanded hood of the cobra. It is a very common mistake among officials and others to speak, and to write, of the Sabri, *euphorbia nerrifolia*, as cactus, which it has no claim to be, and thus confusion is caused. The prickly-pear is botanically called the *cactus indicus* by Roxburgh in his *Flora Indica*. The *opuntia dillenii* is enormously aggressive with its very great power of spreading, for the joints strike root wherever they may find themselves carried and dropped by man, or by the wind or by water, and the seeds are deposited in all directions by birds, which eat the fruit, and when once this plant has been introduced upon a boundary line as a living hedge, an office it discharges very effectively, it very soon invades the property it was originally brought to protect. New growth, seedlings and shoots, come up here, there and everywhere, and as it is very gregarious it soon occupies land to the exclusion of superior vegetation and of grasses. It has to be cut down limb by limb, levelled to the ground, then the roots have to be dug up, and the whole carcass buried under several feet of earth; this is the most